

PATENT CLAIMS

1. A sensor unit having a measured signal receiver which registers a measured signal, an A/D converter for digitizing the measured signal, a transceiver device for wireless data transmission to an environmental device and a processor which activates the measured signal receiver, the A/D converter, and the transceiver device and digitizes the measured signal and subsequently transmits directly via the transceiver device to the environmental device, which is connected to an analysis unit that processes the measured signal further into a measured value.
 - 10 2. The sensor unit of claim 1,
wherein the measured signal receiver, the A/D converter, and the transceiver device each have a data input, a data output, and a control input, the data input of the A/D converter being connected to the data output of the measured signal receiver and the data input of the transceiver device being connected to the data output of the A/D converter, the transceiver device exchanging data with the environmental device via its data output, and the processor influencing the measured signal receiver, the A/D converter, and the transceiver device via each of the control inputs.
 3. The sensor unit of claim 1 or 2,
wherein the sensor unit is a fill level sensor.
 - 20 4. The sensor unit of claim 3,
wherein the measured signal receiver of the fill level sensor transmits and receives a radar signal, an ultrasound signal, or a guided microwave signal.
 5. The sensor unit of one of claims 1 through 4,
wherein the measured signal is a propagation time signal.

6. The sensor unit of one of claims 1 through 5,
wherein the wireless transmission of the data between the sensor unit and the environmental device having an analysis unit is performed according to the WLAN (IEEE 802.11) standard, such as the 54 Mbps WLAN (IEEE 802.11g) standard, or the
5 wireless personal area network standard (IEEE 802.15), having multiple substandards such as Bluetooth, HiperLAN 2 standard, the DECT standard, the GSM standard or the UMTS standard.
7. The sensor unit of one of claims 1 through 5,
wherein bidirectional data transmission occurs between the sensor unit and the
10 environmental device having an analysis unit.
8. The sensor unit of one of claims 1 through 7,
wherein the environmental device having an analysis unit is connected to a process control system.
9. The sensor unit of claim 8,
15 **wherein** the environmental device having an analysis unit is wirelessly connected to the process control system.
10. The sensor unit of claim 8 or 9,
wherein bidirectional data transmission occurs between the environmental device having an analysis unit and the process control system.
- 20 11. The sensor unit of claims 8 through 10,
wherein the environmental device having an analysis unit is a mobile device.
12. The sensor unit of one of claims 1 through 11,
wherein the sensor unit is wirelessly connected to a further environmental device, the further environmental device comprising a control and display unit.

13. The sensor unit of claim 12,
wherein the environmental device having a control and display unit is a mobile device.
14. The sensor unit of claim 12 or 13,
wherein the environmental device having an analysis unit is wirelessly connected to the
5 environmental device having a control and display unit.
15. The sensor unit of one of claims 12 through 14,
wherein bidirectional data transmission occurs between the environmental device
having a control and display unit and the environmental device having an analysis unit.
16. The sensor unit of one of claims 12 through 15,
10 **wherein** the sensor unit has a further transceiver device which communicates with the
environmental device having a control and display unit.
17. The sensor unit of claims 12 through 16,
wherein the wireless transmission of the data between the sensor unit and the
environmental device having a control and display unit and/or between the
15 environmental device having an analysis unit and the environmental device having a
control and display unit is performed according to the WLAN (IEEE 802.11) standard,
such as the 54 Mbps WLAN (IEEE 802.11g) standard, or the wireless personal area
network standard (IEEE 802.15), having multiple substandards such as Bluetooth,
HiperLAN 2 standard, the DECT standard, the GSM standard or the UMTS standard.
- 20 18. The sensor unit of claims 12 through 17,
wherein the sensor unit exchanges parameter and status data with the environmental
device having a control and display unit.
19. The sensor unit of one of claims 1 through 18,
wherein the analysis unit and the control and display unit are integrated into one

environmental device.

20. The sensor unit of one of claims 1 through 19,

wherein an interface for wire-bound transmission of data is provided on the sensor unit.

21. A data communication system, comprising multiple sensor units of one of claims

5 1 through 20 and an environmental device that communicates wirelessly therewith,
which is coupled to an analysis unit.

22. The data communication system of claim 21,

wherein the data communication system comprises the environmental device having a
control and display unit.

10 23. An environmental device, comprising a transceiver device which is implemented
for wireless communication with at least one sensor device of one of claims 1 through
20, an analysis unit being integrated into the environmental device or the environmental
device being connectable to an external analysis unit, and the analysis unit processing a
digital measured signal received from a sensor device further into a measured value.